Patent
Attorney Docket No.: 003301-050

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application:			
Håkan WOLGÉ			
Application No.:	09/936,500	Group:	2171
Filed:	January 25, 2002	Examiner:	Susan Chen
		Conf No.:	4378
Title:	METHOD FOR EXTRACTING INFORMATION FROM A DATABASE		

BRIEF FOR APPELLANT

Attn: Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Further to the Notice of Appeal filed November 22, 2004, this Appeal Brief is respectfully submitted. This appeal is from the decision of the Examiner dated July 23, 2004, finally rejecting claims 1 - 15. All claims pending in the application, namely claims 1 - 15, are reproduced as an Appendix to this Brief.

The November 22, 2004 filing of the Notice of Appeal provided for a period for filing an Appeal Brief set to expire January 22, 2005. January 22, 2005 falls on a Saturday, so the present Appeal Brief is timely filed on Monday, January 24, 2005.

A check covering the $500.00 (1402) Government fee is filed herewith. The Commissioner is hereby authorized to charge any appropriate fees that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800.

I. REAL PARTY IN INTEREST

The entire interest in the present application, and the invention to which it is directed, is assigned to Qliktech International AB, a corporation duly organized under and pursuant to the laws of Sweden and having its principal place of business at Forskningsbyn Ideon, 223 70

Lund, Sweden; said assignment being recorded in the United States Patent and Trademark Office at Reel 012648, Frame 0569.

II. RELATED APPEALS AND INTERFERENCES

The Applicant's legal representative or assignee does not know of any other appeals or interferences which will directly affect or be directly affected by or have bearing on the Board's decision in this appeal.

III. STATUS OF THE CLAIMS

This application was originally filed with claims 1 - 15, and claims 1 - 15 are currently pending in the application. Claims 1 - 15 stand finally rejected under 35 USC § 112. Accordingly, claims 1 - 15 are the subject of the present appeal. A correct copy of all pending claims, comprised of the claims on appeal, is attached as an Appendix to this Brief.

IV. STATUS OF AMENDMENTS

No response was filed to the July 23, 2004 final Office Action. A draft Proposed Amendment was sent to the Examiner on November 15, 2004 by facsimile as the basis for discussing the July 23, 2004 rejection in a personal interview with the Examiner, which was conducted November 18, 2004. The Proposed Amendment was not filed with the U.S. Patent and Trademark Office, so no claim amendments have been filed in response to the July 23, 2004; and no claim amendments are pending.

V. SUMMARY OF THE INVENTION

Exemplary embodiments of the Applicant's invention are directed toward a computer implemented method for extracting information from a database (abstract; page 3, lines 7 - 9; page 7, lines 7 - 9). The database is comprised of data tables, with each data table containing data values of a number of data variables (page 6, line 33 - page 7, line 4; Figure 1). The extraction of information from the database can be accomplished by evaluating a mathematical function (page 8, lines 22 - 25). For example, a user may want to extract the total sales per year and per client from the database (page 8, lines 25 - 27). A mathematical function corresponding to the exemplary extraction could be, "Sum(x * y)" (page 8, lines 27 - 28). The x and y calculation variables associated with this exemplary function could be

"price" and "number" (page 8, lines 28 - 30). The classification variables associated with this exemplary extraction would be "client" and "year" (page 8, lines 30 - 31). All data tables containing any of the calculation variables or the classification variables are identified as boundary tables (page 8, lines 32 - 36; Figure 1). Any intermediate data tables residing in the connecting paths between the boundary tables are denoted as connecting tables (page 8, line 36 - page 9, line 2; page 9, lines 32 - 34; Fig. 1). A starting table having the largest number of data records is selected from the data tables (page 5, lines 3 - 5; page 9, lines 26 - 32). Conversion and intermediate data structures are built to accommodate each calculation variable and each classification variable found in the boundary tables (page 9, line 35 - page 11, line 19; Figures 13 - 16). A final data structure comprising the extracted information for presentation to the user is built from the intermediate data structure (page 15, lines 21 - 34; Figures 17 - 18).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Claims 1 - 15 stand rejected under 35 USC § 112, first paragraph, as containing subject matter that lacks sufficient support in the specification to enable any person skilled in the art to make and use the invention.

B. Claims 1 - 15 stand rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly pointing out and distinctly claiming the subject matter which the Applicant regards as his invention.

VII. ARGUMENT

A. Claims 1 - 15 are not properly rejected under 35 USC § 112, first paragraph, as containing subject matter that allegedly lacks sufficient support in the specification to enable any person skilled in the art to make and use the invention.

On page 3 of the Office Action, claims 1 - 15 were rejected under 35 USC §112, first paragraph, as failing to enable one skilled in the art to make or use the invention. This rejection is respectfully traversed.

The Applicant's invention is directed to a method for extracting and presenting information from a database, where the database is comprised of a number of data tables

containing values of a number of data variables (specification at page 3, lines 9 - 13 and 34 - 27; page 6, lines 33 - 35). The desired information to be extracted from the database can be expressed as a mathematical function (page 3, lines 9 - 11; page 8, lines 22 - 25). For example, the user can seek to extract the total sales per year and per client from the database (page 8, lines 25 - 27). In this example, "price" and "number of units sold" would be the calculation variables in the mathematical function for the extraction process (page 8, lines 27 - 30). "Year" and "client" would be the classification variables for the extraction (page 8, lines 30 - 31). By executing the mathematical function according to exemplary embodiments, the relevant extracted information, e.g., the total sales, will be partitioned across, or divided among, the classification variables of year and client for presentation to the user (page 1, lines 21 - 32; page 16, lines 13 - 18).

As can be seen from Figure 1, the data tables contain values for these variables, and the computer identifies all such data tables containing the calculation or the classification variables, with all such tables being designated boundary tables (page 8, lines 32 - 36; Figure 1). The computer also identifies all intermediate data tables in the connecting paths between these boundary tables, with these intermediate data tables being designated connecting tables (page 8, line 36 - page 9, line 2). The corresponding graphical structure of boundary and connecting tables can be viewed as a snowflake structure because the connections among the data tables show a branching data structure in which the branching spreads outward with no loops back -- i.e. has the appearance of a snowflake (page 8, lines 12 - 17; page 8, line 32 - page 9, line 2; Figure 1).

A starting table is selected by the computer, preferably a data table with the largest number of classification and calculation variables data records in it, so that the starting table can be linked to the largest number of boundary tables (page 9, lines 26 - 34). A conversion structure is built by the system for translating each value of each connecting variable (such as "date" and "product") in the starting table into a value of a corresponding calculation or classification variable (page 9, line 35 - page 10, line 4; Figures 1 and 4). By use of the conversion structure, each value of each connection variable in the starting table is converted into a value of a corresponding calculation or classification variable (page 10, lines 29 - 33; Figures 1 and 4). Each of the data records in the starting table is similarly processed, thereby linking through the connecting tables to extract all calculation and classification values associated with the mathematical function (page 11, lines 12 - 17; page 13, lines 23 - 28). A

final, multidimensional data structure is then created for presenting the result of the mathematical function for every unique value of the classification variables (page 15, lines 21 - 34; Figure 5).

The Office Action has cited three elements that are allegedly recited in claim 1 and has asserted that the three elements lack support in the specification. The Applicant respectfully disagrees and has presented the above summary of the claimed invention, with citations for support in the specification, as an aid in explaining where each of the elements cited by the Office Action find support in the specification. The term, "partitioned," is meant to express the feature of separating and presenting the extracted information across the selected classification variables (page 16, lines 9 - 18). In the example cited above and in the specification, the extracted information would be the total price, which is presented in the final data structure under the classification variables of "year" and "client" (see page 1, lines 21 - 29; Table 18 of Figure 5).

The claimed feature of "identifying all data tables containing at least one value of one of said calculation or classification variables" is disclosed in the specification at least at page 8, lines 32 - 36; Figure 1. For example, for the calculation variables of "price" and "number," the data tables containing values for these variables would be Tables 1 and 2. Similarly, Tables 2, 3, and 4 contain values for the classification variables.

As regards defining the metes and bounds of the boundary tables and connecting tables, no such element is recited in claim 1. Further, one of the features of exemplary embodiments is that the method is not constrained by requiring specific, limited data tables and does not required boundary tables and connecting tables having a fixed data structure bounded by predetermined limits. See, for example, the various data table structures shown in Figure 1. Contrary to the unsupported assertions in the Office Action that defining the metes and bounds of the tables are critical, exemplary embodiments are expressly designed to avoid specific limitations on table sizes and dimensions. See, for example, specification at page 3, line 23 - page 4, line 4; page 6, line 33 - page 7, line 4; page 7, lines 7 - 26; page 8, lines 4 - 10; page 8, line 32 - page 9, line 16; and page 15, line 21 - page 16, line 2.

In view of the above explanation, reversal of the rejection of claim 1 under 35 USC §112, first paragraph, is respectfully requested.

The Office Action has rejected claims 2 - 14 under the same basis as rejecting claim 1, with no further explanation. Accordingly, reversal of the rejection of claims 2 - 14 under

35 USC §112, first paragraph, is respectfully requested for the same reasons as presented above regarding claim 1.

As regards the rejection of claim 15 under 35 USC §112, first paragraph, the Applicant notes that no specific reason for the rejection of claim 15 has been asserted in the Office Action other than aggregating the rejection of claims 1 - 15 together, contrary to the requirements of MPEP § 706. For the reasons expressed above regarding the rejections of claims 1 - 15 and because claim 15 depends from claim 1, the Applicant respectfully requests reversal of the rejection of claim 15.

B. Claims 1 - 15 are not properly rejected under 35 USC § 112, second paragraph, as being indefinite for allegedly failing to particularly pointing out and distinctly claiming the subject matter which the Applicant regards as his invention.

On page 4 of the Office Action, claims 1 - 15 were rejected under 35 USC §112, second paragraph, as failing to particularly point out and distinctly claim the subject matter of the invention. This rejection is respectfully traversed.

The Office Action has cited several phrases that are allegedly recited in claim 1 and has further raised a question regarding how the variables of claim 1 yield a final result. As regards the feature of "a number of data tables containing values of a number of variables" recited in the preamble of claim 1, the Applicant cites to the specification at page 6, line 33 - page 7, line 4 and Tables 1 - 5 of Figure 1 as supporting this claimed feature. Tables 1 - 5 are examples of the data tables recited in the preamble to claim 1. Each data table has one or more variables, such as "product," "price," "client," or "year." Each of the variables has one or more values in the data tables, such as the "price" variable in data table 1 having values of "7.5," "9.35," "6.5," and "6.5." Accordingly, the specification clearly discloses a "number of data tables containing values of a number of variables," in full compliance with 35 USC § 112, second paragraph.

The "one or more selected calculation variables" are disclosed at least at page 1, lines 18 - 32 and page 8, lines 25 - 30 and represent the variables of the mathematical function. In the example discussed above and in the specification, the mathematical function corresponds to the information to be extracted, namely total sales per year and client. The total sales were calculated by multiplying the values of the variables, price and number of units sold.

Accordingly, as clearly explained in the specification, the selected calculation variables in the example would be price and number.

The "one or more selected classification variables" are disclosed at least at page 1, lines 18 - 29 and page 8, lines 25 - 31 and represent the classification(s) into which the results of the mathematical expression are to be allocated or partitioned in the final data structure for presentation to the user (see page 1, lines 14 - 32; page 16, lines 9 - 18). In the example discussed above and in the specification, the classification of the results are clearly disclosed to be by year and client.

The linking among the boundary tables, the starting table, and the variables is performed based on the variables defined for each table, as disclosed at least at page 3, line 34 - page 4, line 5; page 7, lines 20 - 23; page 8, line 32 - page 9, line 2; Figure 1. By use of the calculation variables and the classification variables, the data tables containing any of these variables are linked through the building of a conversion structure to permit the computer to obtain the values of the corresponding variables and to compute the result of the mathematical function provided to extract the desired information (page 8, line 4 - page 9, line 2). Accordingly, the linking of the values of each selected variable is clearly recited in claim 1 and fully supported in the specification.

The variables in the present application represent the classification of the values in the database. For example, as shown in Table 1 of Figure 1, the "Price" variable has values of "7.5," "9.35," "6.5," and "6.5." Without the variables to classify the values, there would be no way to evaluate the data values of the database according to a particular mathematical function for the presentation of the extracted information to a user according to exemplary embodiments (see page 1, lines 21 - 32). For example, in the absence of the variables, there would be no way to distinguish between a "6" of price and a "6" of number. Further, the variables in each data table link together those data tables that contain related information, as disclosed at least at page 8, line 25 - page 10, line 4. The method by which the variables are utilized to create the final data structure is summarized above and disclosed in the specification at least at page 8, line 23 - page 15, line 34.

In view of the above explanation, reversal of the rejection of claim 1 under 35 USC §112, second paragraph, is respectfully requested.

The Office Action has rejected claims 2 - 15 under the same basis as rejecting claim 1, with no further explanation. Accordingly, reversal of the rejection of claims 2 - 15 under

35 USC §112, second paragraph, is respectfully requested for the same reasons as presented above regarding claim 1.

CONCLUSION

While the Applicant has provided the above explanations and citations to the specification, it is respectfully submitted that the specification and the claims as amended April 29, 2004 are in full compliance with the requirements of 37 CFR §1.75 and 35 USC §112. Accordingly, the Applicants respectfully assert that no claim ambiguity existed subsequent to the April 29, 2004 amendment when the present Office Action was drafted and that the application was in condition for an art search to have been done. Therefore, the Applicant respectfully requests that the present rejections be reversed; that an art search be performed; and that the claims be reconsidered in view of the above remarks.

Respectfully submitted,

Burns, Doane, Swecker & Mathis, L.L.P.

By: _____
William N. Hughet
Reg. No. 44,481

P.O. Box 1404
Alexandria, Virginia 22314-1404
Telephone: (703) 836-6620
Facsimile: (703) 836-2021

Date: January 24, 2005 .

APPENDIX

All Pending Claims, Including The Claims Under Appeal,

Namely Claims 1 - 15

1. (Previously Presented) A computer implemented method for extracting information from a database, which comprises a number of data tables containing values of a number of variables, each data table consisting of at least one data record including at least two of said values, said information being extracted by evaluation of at least one mathematical function operating on one or more selected calculation variables, said extracted information being partitioned on one or more selected classification variables, characterized by the steps of:

identifying all data tables containing at least one value of one of said selected calculation or classification variables, such data tables being boundary tables;

identifying all data tables that, directly or indirectly, have variables in common with said boundary tables and connect the same, such data tables being connecting tables;

electing a starting table among said boundary and connecting tables;

building a conversion structure that links values of each selected variable in said boundary tables to corresponding values of one or more connecting variables in said starting table;

evaluating said mathematical function for each data record of said starting table, by using said conversion structure to convert each value of each connecting variable into at least one value of at least one corresponding selected variable ; and

generating a final data structure based on said evaluation, said final data structure containing an extracted result of said mathematical function for every unique value of each classification variable.

2. (Original) A method as set forth in claim 1, characterized by the further step of presenting relevant parts of said resulting data structure to the user in human-readable form.

3. (Previously Presented) A method as set forth in claim 1, characterized by the further step of initially reading said data records of said database into the primary memory of a computer.

4. (Previously Presented) A method as set forth in claim 1, characterized by the further step of initially assigning a different binary code to each unique value of each data variable in said database and storing the data records in binary-coded form.

5. (Previously Presented) A method as set forth in claim 1, characterized by the further steps of initially identifying all data tables in said database that have variables in common, and assigning virtual connections between such data tables, thereby creating a database with a snowflake structure, wherein said connecting tables are located between said boundary tables in said snowflake structure.

6. (Previously Presented) A method as set forth in claim 1, characterized by the further steps of identifying all calculation variables for which the number of occurrences of each value is necessary for correct evaluation of said mathematical function, defining a subset of data tables consisting of boundary tables containing such variables and data tables connecting such boundary tables, electing said starting table from said subset, and including data on said number of occurrences of each value in said conversion structure.

7. (Previously Presented) A method as set forth in claim 1, characterized in that said starting table is the data table among said boundary and connecting tables having the largest number of data records.

8. (Previously Presented) A method as set forth in claim 1, characterized by the further step of building said final data structure, which includes a number of data records, each of which contains a field for each selected classification variable and an aggregation field for said mathematical function, wherein said building step includes sequentially reading a data record of said starting table, creating a current combination of values of said selected variables by using said conversion structure to convert each value of each connecting variable in said data record into a value of at least one corresponding selected variable, evaluating said mathematical function for said current combination of values, and aggregating the result of said evaluation in the appropriate aggregation field based on the current value of each selected classification variable.

9. (Previously Presented) A method as set forth in claim 1, characterized by the further step of creating a virtual data record containing a combination of values of said selected variables, wherein said creating step includes reading a data record of said starting table and using said conversion structure to convert each value of each connecting variable in said data record into a value of at least one corresponding selected variable.

10. (Original) A method as set forth in claim 9, characterized by the further step of building said final data structure which includes a number of data records, each of which contains a field for each selected classification variable and an aggregation field for said mathematical function, wherein said building step includes sequentially reading a data record of said starting table, updating the content of said virtual data record based on the content of each such data record, evaluating said mathematical function based on said updated virtual data record, and aggregating the result of said evaluation in the appropriate aggregation field based on the current value of each selected classification variable in said updated virtual data record.

11. (Original) A method as set forth in claim 9, characterized by the further step of building an intermediate data structure which includes a number of data records, each of which contains a field for each selected classification variable and an aggregation field for each mathematical expression implied by said mathematical function, wherein said building step includes sequentially reading a data record of said starting table, updating the content of said virtual data record based on the content of each such data record, evaluating each mathematical expression based on said updated virtual data record, and aggregating the result of said evaluation in an appropriate aggregation field based on the current value of each selected classification variable in said updated virtual data record.

12. (Original) A method as set forth in claim 11, characterized in that said step of building said intermediate data structure includes:

eliminating one of said classification variables in said intermediate data structure by aggregating said results over all values of said one classification variable for each unique combination of values of remaining classification variables, by creating additional data records, and by incorporating said aggregated results in said additional data records of said intermediate data structure.

13. (Previously Presented) A method as set forth in claim 11, characterized by the further step of evaluating said mathematical function based on said results in said aggregation fields for each unique combination of values of said classification variables, thereby building said final data structure.

14. (Previously Presented) A method as set forth in claim 1, characterized in that said step of building said conversion structure includes:

a) reading data records of a boundary table, and creating a conversion structure including a link between each unique value of at least one connecting variable in said boundary table and each corresponding value of at least one selected variable therein;

b) processing through said boundary table towards said starting table;

c) if a connecting table is found, reading a data records of said connecting table, and substituting each unique value of said at least one connecting variable in said conversion structure for at least one corresponding unique value of at least one connecting variable in said connecting table; and

d) repeating steps(b) - (c) until said starting table is found.

15. (Previously Presented) An article of manufacture comprising a computer readable medium having stored thereon a computer program for effecting the steps of a method for extracting information from a database as set forth in claim 1.